REMARKS

Amendments

Applicant has made some minor amendments to the claims. Applicant has deleted "a" before "net zero current flow." Applicant has also replaced "stimulator" with --stimulation-- before "pulses" in various locations. These amendments are made for the purpose of grammatical style only and do not affect the scope of the claims.

Also, Applicant has amended claims 1 and 13 to recite that a pulse width of the reverse pulse is longer than a pulse width of the first stimulation pulse and an amplitude of the reverse pulse is lower than an amplitude of the first stimulation pulse. The amendment is supported by the original application. No new matter has been entered. Applicant has also cancelled claims 3, 8, 16, and 19 in view of the amendments to claims 1 and 13.

Applicant has cancelled claims 28-34 without prejudice for the purpose of allowing the entry of new claims 35-39 without the payment of new claim fees. New claims 35-39 are supported by the original application and no new matter has been entered.

Rejection under 35 U.S.C. § 102(b)

Claims 1, 5-6, 8, 9, 11, 13, 15, 19, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Canfield (U.S. Patent No. 5,486,201).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Applicant respectfully submits that the applied reference does not satisfy these criteria.

Claims 1 and 13

Claim 1 recites, in part:

delivering the first stimulation pulse to the living tissue(s) through electrodes electrically coupled to the stimulator with at least one lead, and wherein at least one blocking capacitor electrically coupled to the first pulse generator provides net zero current flow through the living tissue(s);

generating a reverse pulse that discharges the at least one blocking capacitor in order to shorten the at least one blocking capacitor's discharge period, wherein a pulse width of the reverse pulse is longer than a pulse width of the first stimulation pulse and an amplitude of the reverse pulse is lower than an amplitude of the first stimulation pulse.

Claim 13 recites, in part:

a first pulse generator that outputs a first stimulation pulse;

at least one blocking capacitor electrically coupled to the first pulse generator output, wherein the at least one blocking capacitor is electrically coupled to the first pulse generator in order to provide net zero current flow through living tissues, and wherein a reverse pulse discharges the at least one blocking capacitor in order to shorten the at least one blocking capacitor's discharge period, a pulse width of the reverse pulse being longer than a pulse width of the first stimulation pulse, and an amplitude of the reverse pulse being lower than an amplitude of the first stimulation pulse.

Applicant respectfully submits that Canfield does not disclose each and every limitation of claims 1 and 13. Instead, Canfield discloses a "charge transfer capacitor 42" that is selectively coupled to coupling capacitor 14. See FIG. 2 of Canfield. Charge is transferred from coupling capacitor 14 to charge transfer capacitor 42. Then, in response to a clock signal, charge transfer capacitor 42 is coupled to charge supply 40 by operation of switch 30. This second coupling then transfers the charge away from charge transfer capacitor 42. The next tick of the clock circuit causes switch 30 to reestablish the coupling of charge transfer capacitor 42 to coupling capacitor 14. Col. 5, lines 30-56. This process of switching between coupling capacitor 14 and charge supply 40 is repeated, until the voltage across coupling capacitor 14 is reduced to a predetermined level thereby discharging coupling capacitor 14. Col. 6, lines 27-41.

Applicant submits that there is disclosure in Canfield of "a pulse width of the reverse pulse being longer than a pulse width of the first stimulation pulse, and an amplitude of the reverse pulse being lower than an amplitude of the first stimulation pulse."

Applicant respectfully submits that claims 1 and 13 are not anticipated by Canfield. Claims 5-6, 9, 11, 15, and 20 respectively depend from claims 1 and 13 and, hence, are likewise not anticipated.

Rejection under 35 U.S.C. § 103(a)

Claims 2-4, 7, 10, 12, 14, 16-18, and 21-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Canfield.

As previously discussed claims 3, 16, and 28-34 are cancelled without prejudice and are, therefore, not addressed herein.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143. Applicant respectfully submits that the applied references do not satisfy these criteria.

Claims 2, 4, 7, 10, 12, 14, 15-18, and 21-22 respectively depend from claims 1 and 13 and, hence, inherit all limitations of their base claim. For the reasons discussed above in regard to the rejection under 35 U.S.C. § 102(b), Canfield does not teach or suggest each and every limitation of claims 1 and 13. Accordingly, a prima facie case of obviousness has not been established for claims 2, 4, 7, 10, 12, 14, 15-18, and 21-22.

Claims 23 and 25

Claim 23 recites:

> a first pulse generator that outputs a first stimulation pulse and a reverse stimulation pulse, wherein an absolute total charge delivered by the first stimulation pulse equals an absolute total charge delivered by the reverse stimulation pulse; and
>
> at least one blocking capacitor electrically coupled to the first pulse generator outputs, wherein the at least one blocking capacitor provides net zero current flow through living tissues, and wherein a reverse stimulation pulse is applied to and discharges the least one blocking capacitor in order to shorten the at least one blocking capacitor's discharge period.

Claim 25 recites:

> a first pulse generator that outputs a first stimulation pulse;
>
> a second pulse generator that outputs a reverse stimulation pulse, wherein an absolute total charge delivered by the first stimulation pulse equals an absolute total charge delivered by the reverse stimulation pulse; and
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> at least one blocking capacitor electrically coupled to the first pulse generator's and second pulse generator's outputs, wherein the at least one blocking capacitor provides net zero current flow through living tissues, and wherein a reverse stimulation pulse is applied to and discharges the at least one blocking capacitor in order to shorten the at least one blocking capacitor's discharge period.

As recited in claim 23, the first pulse generator outputs the first stimulation pulse and the reverse pulse. As recited in claim 25, the second pulse generator outputs the reverse pulse. As clearly described in Canfield, therapy circuit 18 is the circuit that generates "pulses," i.e., generates pacing pulses for the patient's heart. The discharge of the blocking capacitor (coupling capacitor 14 of Canfield) occurs using charge transfer capacitor 42, switch 30, and charge supply 40. See FIG. 2 of Canfield. Thus, therapy circuit 18 of Canfield does not generate a "reverse pulse" to discharge a blocking capacitor. Moreover, in regard to claim 25, there is no other "pulse generator" that generates a "reverse pulse" to discharge a blocking capacitor.

Accordingly, Canfield does not teach or suggest each and every limitation of claims 23 and 25. Claims 24, 26, and 27 respectively depend from claims 23 and 25 and, hence,

inherit all limitations of their base claim. A prima facie case of obviousness has not been established for these claims.

Additionally, Applicant notes that the Examiner has asserted that "it is common[ly] known in the art to provide more than one pulse generators," and therefore it would have been obvious to use the second pulse generator to output the reverse pulse. End of page 3 and beginning of page 4 of the Office Action. The Office Action further states that it would have been obvious to make the first stimulation pulse and the reverse pulse "asymmetrical." Office Action, page 4.

Applicant believes that the Examiner has relied upon personal knowledge to support a finding of what is known in the art. Accordingly, Applicant respectfully requests the Examiner to provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding according to 37 CFR § 1.104(d)(2) to enable Applicant to adequately traverse the factual statements and/or provide a declaration from an expert in the field related to the issues raised by the Examiner.

New Claims 35-39

Claim 35 recites:

> generating a first stimulation pulse by a pulse generator of the neurostimulator device and applying the first stimulation pulse to living neural tissue using a first electrode pattern;
>
> generating a reverse pulse by the pulse generator and applying the reverse pulse according to the first electrode pattern to discharge blocking capacitors having retained charge after the first stimulation pulse, wherein a pulse width of the reverse pulse is longer than a pulse width of the first stimulation pulse and an amplitude of the reverse pulse is lower than an amplitude of the first stimulation pulse; and
>
> after the blocking capacitors are discharged, generating a second stimulation pulse by the pulse generator and applying the second stimulation pulse to living neural tissue using a second electrode pattern.

For the reasons discussed above in regard to the rejections under 35 U.S.C. §§ 102(b), 103(a), Canfield does not teach or suggest each and every limitation of claim 35. Moreover, Canfield does not disclose "electrode patterns," using the same electrode pattern for the first stimulation pulse and the reverse pulse, and then changing to a second electrode pattern.

Applicant submits that claim 35 is patentable over Canfield. Claims 36-39 depend from claim 35 and are likewise submitted to be patentable over Canfield.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Conclusion

Applicant respectfully submits that the application is in condition for allowance and requests the Examiner to pass the application to issue. Applicant believes no fee is due with this response. However, if a fee is due, please charge Deposit Account No. 06-2380, under Order No. 02-049 from which the undersigned is authorized to draw.

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Respectfully submitted,

By RR, Vf✓

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